THE

GEOGRAPHICAL MAGAZINE.

DECEMBER, 1878.

A FAREWELL TO OUR READERS.

THE *Geographical Magazine* has fulfilled its objects, and will come to an end with the present number, its place being occupied by the new series of the *Proceedings of the Royal Geographical Society*. The Magazine has both created and supplied a literary want. It has been supported by a large body of geographical readers, and has furnished them with information contributed by many of the most eminent geographers of the day, and with news from all parts of the world bearing on all branches of their science.

Its Editor now addresses his numerous readers for the last time in that capacity; and he thinks it will be well, in the first place, to recapitulate briefly the history of the undertaking which has been under his guidance for the last six years and a half.

In 1870 the plan was conceived of a very useful hand-book for ocean routes, and containing much other information for travellers, which was published by Messrs. Stanford, in 1870 and 1871, and edited by Mr. Dempsey, of the Buckingham Palace Hotel, and Mr. Hughes, F.R.G.S., under the title of *Our Ocean Highways*. This led to the publication of a monthly periodical, called *Our Ocean Highways: a Monthly Supplement to the Annual Volume*, the first number of which, price 1d., and containing four pages, appeared in April 1870. In November 1870, it was enlarged to 8 pages at the same price; and in June, 1871, to 16 pages at 3d. The periodical continued in this form until June 1872, during which time Mr. Hughes wrote a good geographical article for each number. Mr. Dempsey deserves credit as the originator and pioneer of very useful work.

From July 1872, the present Editor assumed the conduct of the undertaking; and from that date to March 1873, the title was *Ocean Highways: The Geographical Record*, consisting of 36 pages in 3 columns, folio (10 being advertisements), price 6d., with a map to illustrate each number. In April 1873, the shape was altered to imperial 8vo (44 pages with double columns), and the title *Ocean Highways: The Geographical Review*. Mr. Dempsey ceased to be the proprietor in March 1874, and from that time the proprietorship was vested in Messrs. TRÜBNER, the publishers, Messrs. PETTITT, the printers, and Mr. Ravenstein. The title was *The Geographical Magazine* from April 1874 (44 pages with double columns in imperial octavo), with maps to illustrate each number. In this form the Magazine has been published monthly from April 1874, to December 1878. Mr. Ravenstein parted with his share in July 1877.

The present Editor undertook the task at the suggestion of Sir Bartle Frere, and his position in the India Office made it necessary that he should do so with the approval of Mr. Herman Merivale, the Under Secretary of State for India. This permission was cordially granted; and the Editor soon afterwards was so fortunate as to secure the permanent aid of Mr. Ravenstein to review maps and charts; of Mr. C. E. D. Black for literary work; and of Mr. W. Ronson as a most valuable and efficient assistant.

The Editor had long thought that the *Proceedings of the Royal Geographical Society* were capable of great improvement, and that they ought to be, and might be made the leading authority in the world on all subjects relating to geography. As the time was not then ripe, he resolved, in editing the *Geographical Magazine*, to aim at realizing his idea of what he conceived that the Proceedings of the Society ought to be. With this object in view, he divided the matter in each number into the following sections:—

(1) Articles: consisting of geographical reports on new or unexplored countries; accounts of geographical enterprises; notices respecting the geography of regions which are attracting public attention; histories of surveys and of such departments as that of the Hydrographer to the Admiralty; papers on comparative geography, and obituaries.

(2) Reviews of geographical books.

(3) Cartography. Reviews of new maps and charts.

(4) Log Book. Geographical news arranged in concise paragraphs.

(5) Correspondence, in which geographical points of interest are discussed.

(6) Proceedings of the Royal Geographical Society, and of all foreign Geographical Societies.

The experience of six years, and a large correspondence with subscribers and contributors who have furnished the Editor with advice and opinions, have convinced him that the above form is the best that can be adopted for a geographical record in this country. Illustration is absolutely necessary, and one map, frequently two, has been given in each number.

The Magazine has met with a cordial and hearty reception from geographers in all parts of the world. It has had a steady constituency of upwards of a thousand subscribers; and has received valuable contributions from geographers and men of letters of the

highest eminence, so that the volumes will be of permanent value. Some of the articles have been published in a separate form. "The Threshold of the Unknown Region" has passed through four editions. Captain Palmer's interesting account of the Ordnance Survey was published separately by Mr. Stanford, and "Incidents in the Biography of Dust," by Mr. Malet, and the "Memoirs of Hans Hendrik," by Messrs. Trübner.

The great aim of the Magazine has been to furnish geographical information and news to its readers from all parts of the world. But the Editor has also striven to secure some special objects. One of these has been the resumption and continuance by this country of Arctic exploration. The first article in his first number (July 1872) was by the lamented Sherard Osborn, on the "Renewal of Arctic Discovery." An article in the present and last number is on the same subject. In the interval, the country has been aroused from a long lethargy; has despatched a well-equipped Arctic Expedition, which has returned with a full measure of valuable geographical and other results; has again become lethargic on the matter of polar research, and is now, we trust, about once more to be roused to action.

Another great object of the Editor has been to bring the Indian Surveys into the prominence they deserve, and to devote due attention to the geography of Central Asia. The work of the Indian Survey has, through the pages of the Magazine, been made widely known not only to geographers and others in this country, but to enquirers in all parts of the civilized world. The periodical consignments of maps from India, as they have arrived, have been regularly noticed and reviewed under the head of "Cartography." News connected with the surveys has been disseminated; useful maps have been prepared, some of which have proved of great value in India; and a large number of permanently valuable geographical articles on Indian and Central Asian subjects have been published. Many of these articles are by Colonel Yule, and others by Colonel Meadows Taylor, Dr. Brandis, Sir Arthur Phayre, Sir Frederic Goldsmid, Major St. John, Major Herbert Wood, Mr. Shaw, M. Vambery, Baron Richthofen, M. Khanikoff, Dr. Badger, Mr. Delmar Morgan, Major Raverty, Mr. Howorth, Mr. Michell, Major Trotter, Major Godwin Austen, Mr. Black, Captain A. D. Taylor, Lieutenant Stiffe and the Editor. Many will be useful hereafter in the India Office.

We may measure the success of the Magazine by the permanent value of the contents of the volumes; and by the support it has received. We conclude our labours with the feeling that we have worked for our constituents to the best of our ability, and that we have spared no pains and no trouble; while we are confident that no Editor was ever aided by a more zealous and efficient staff.

In the fulness of time the Council of the Royal Geographical Society felt the necessity for so enlarging and improving their Proceedings as that they should cover the whole ground occupied by the Magazine. The resources and position of the Society made it obvious that the great work would best be continued through its instrumentality, and that the Magazine would fitly and usefully find its successor in a monthly periodical containing the same matter, and published by the Geographical Society. A satisfactory understanding was arrived at, and on the 25th of November 1878, a Resolution was passed by the Council of the Royal Geographical Society that a sum should be paid from the funds of the Society to the proprietors of *The Geographical Magazine* as an acknowledgment of the services rendered by their periodical during the last 6½ years to the cause of geography, and in consideration of the surrender of their stock, and the transfer of their goodwill to the Society's proposed publication of Monthly Proceedings.

The Magazine has, we believe, completed its work and fulfilled its mission. Its labours have not been in vain; its objects will not die with it; but will be actively and ably pursued by its successor.

The title of the new publication will be *Proceedings of the Royal Geographical Society and Monthly Geographical Record*. It will be edited by the Assistant Secretary, and will be published regularly on the 1st of each month. The shape will be royal octavo. The Proceedings will commence with addresses delivered or papers read at the meetings of the Society, together with the discussions; then will follow articles on geographical subjects; geographical news, as "Record," similar to our "Log Book;" reviews of books and maps; correspondence; and notices of the proceedings of Foreign Geographical Societies. In short the contents will be identical with those of our Magazine. Each number will be illustrated by one or more maps. The price for subscribers, who are not Fellows, will be 1*s.* 6*d.*, the same as for our Magazine.

We trust that the subscribers to the Magazine will continue their support to the Monthly Proceedings of the Royal Geographical Society; for they will find the same information, while the resources for obtaining and illustrating it will be infinitely greater. The Magazine has prepared the ground, has worked long and zealously to supply a want, and the task will now be still more fully and completely attended to by its successor.

THE BOLAN PASS.

IN our last number we passed in review the wild tribes of our north-west frontier, and the passes from the Kaibar to the Gomul, especially describing the Kurram pass which leads directly from the valley of the Indus to Ghazni. These passes are interesting from an historical point of view, because the most memorable invasions of India have been undertaken by them, and particularly by the Kaibar pass.

The Emperor Baber mentions four passes leading from Kabul into India. The first was by way of Lamghanât, which is north of the Kabul river. The second was by Bangsh. The Bangash tribe occupied the Kurram valley, and does so to this day. The third was by Naghr, and the fourth by Fermul. Fermul is a valley between the Kurram and Gomul passes. The three last all converge to the Kurram valley, and may be described as routes leading from Kurram to Kabul and Ghazni. Baber, from his mountain capital of Kabul, was meditating the conquest of India during many years, from 1505 to 1525, when he finally crossed the Indus at Nilâb (15 miles below Attock), and did not return. He usually adopted the route of the Kaibar pass, but on one

occasion he made a very interesting march which involved geographical discovery to him, and which led over ground still little better known to us. It is to the south of the area covered by the map in our last number, and the adventurous march introduces us to another pass from Afghanistan into India.

It is scarcely necessary to introduce the young ex-King of Ferghana to our readers. Driven from his native country by the conquering Uzbegs under Shaibani Khan, he crossed the Hindu Kush with a handful of faithful followers, establishing his rule at Kabul in 1504, and afterwards over the greater part of Afghanistan. There he meditated the conquest of India, and after several tentative expeditions, at last founded the dynasty of the "Great Moguls" in 1525. The march to which we allude, and which will be interesting to geographers, was made by Baber in the year 1505. He set out from Kabul in January, never having yet seen the "Germsîl," or country of warm temperatures, and was struck with wonder at the change. The grass, the trees, the birds, the animals, the people—all were different. He marched through the Kaibar pass and encamped at Jamrûd, close to the entrance of the gorge, in the valley of Peshawur. He then rode onwards to visit Peshawur, which was called Bekrâm in those days, and to examine the country. He was advised not to cross the Indus, but to turn his steps towards Kohat, and, as he had himself never even heard the name of the place, he adopted the suggestion, crossed the Kohat pass, and plundered the valley as far as the banks of the Indus. It was next determined to ravage the Banu country, and to return into Afghanistan by way of Naghr and Fermul—that is by the Kurram pass. He was engaged in desultory fights with the Afghan tribes, killing all his prisoners and making minarets of their heads; and in this way he advanced into the Banu district, which he describes as being fertilised by the River Bangash, the modern Kurram. After ravaging Banu, Baber was about to return by the Kurram pass, when it was represented to him that in the district to the south, called Desht (Damân), the inhabitants were wealthy and the roads good; so he altered his route and determined to plunder the Desht, and then return by some more southerly pass.

As he advanced, the inhabitants belonging to a tribe which he calls Isa-khail, fled to the mountains on his right, and made some night attacks, but Baber was a vigilant commander and could never be taken by surprise. In Damân he plundered a rich caravan of Povindahs or Lohanis, the warlike merchants of whom we gave an account in our last number, and killed their chief, who was one of the most noted and eminent of the Afghan merchants. The Povindah caravan had white cloths, aromatic drugs, and sugar both candied and powdered; so that it was on its way from India.

Baber's next march brought him to the banks of the Gomul, and there was a discussion whether he should return by the Gomul (or Gholeri) pass. There had been a heavy rainfall, and the river was much swollen, so that the guides reported unfavourably. It was then suggested that the mountain called Takhti Sulaiman was near, and that if they could turn its southern extremity they would come to a road that was level, although it might make a difference of a march or two. This plan was adopted and the river Gomul was crossed, but none of the party having ever been by the proposed route, it was chosen, as Baber tells us, "on mere idle surmise." Marching along the skirts of the mountains to the southward, the monotony of the journey was broken by a skirmish with Afghan borderers, including an exhilarating cavalry charge. After four marches to the south they halted at Belah on the Indus, a small district dependent on Multan. The inhabitants fled across the river by swimming or in boats, and Baber made yet two more marches to the southward. He left the banks at a point opposite to the tomb of Pîr Khana, south of Dera Ismail Khan. He then marched westward to the mountains, and halted on the summit of a hill pass, apparently the pass of Sanghar, which was afterwards used by Prince Dara in 1653. But the pass leads direct to Kandahar, so that Baber must have turned to the right in order to reach his destination, which was Ghazni. His route was through a mountainous country, which he calls *Duki*, but the name does not appear on modern maps. The horses were completely worn out, from 200 to 300 were knocked up each day; and in five marches their route brought them to the banks of the lake of Abistâdeh. Baber describes this sheet of water as so large that nothing could be seen of the land on the opposite side, and as receiving the drainage from the valley of Katteh-waz, the dale of Zûrmet, and the river of Ghazni. As he approached the shores of the lake, Baber saw, between the water and the heavens, something of a red appearance like the ruddy crepuscule, which again by and by vanished, and so continued shifting until he came near it. When close up he discovered that this appearance was occasioned by immense flocks of wild geese, not ten thousand or twenty thousand, but absolutely beyond computation and innumerable. In their flight, as they moved their wings, their red feathers sometimes appeared, and sometimes were hid. The description sounds more like flamingoes. He adds that they were not wild geese alone, but that innumerable flocks of every species of wild fowl settled on the waters of the lakes, and the eggs of countless multitudes of fowl were deposited on every corner of its banks. A few Afghans were employed in collecting the eggs. Baber describes the Abistâdeh lake as shallow, judging from the levelness of the plain, and the very gradual increase of depth when the horses waded into it. He marched thence to Ghazni.

This march of Baber, in 1505, seems worthy of attention, not only because he describes a pass, south of the Gomul, which has not been traversed by any Englishman; but also because his narrative suggests the comparative ease with which India may be reached by numerous routes which are unsurveyed and almost unknown. The pass used by Baber appears eventually to have led him into the Gomul pass, and was probably the Sanghar pass.

But the chief and most important route to the south of the Gomul, is by the Bolan pass, leading from the plains of the Indus to Kandahar. A map of the Bolan is given in the present number, and we now propose to describe the pass in detail, having, in our last number furnished some account of the tribes which inhabit the region to the north and west of it.

The Bolan pass is not that which has generally

been used by the conquerors of India. Baber, as we have seen, usually marched down the Kaibar, as did Nadir Shah. Ahmed Shah, however, the founder of the Afghan Durani Monarchy, fixed his seat of Government at Kandahar. His first invasion of India, in 1748, was by the Kaibar, but he seems to have returned by the Bolan, and on other occasions he traversed the Bolan pass, which was more conveniently situated as regards Kandahar. It was at the sanatorium of Murgha, in the hills of Toba overhanging the Bolan, that Ahmed Shah died in 1773. The pass was traversed by Masson and Conolly, and by the English army which invaded Afghanistan in 1839.

The Bolan pass is the grand route from Shikarpur and Dadur in northern Sind to Kandahar. It is a pass over a lofty range by a continuous succession of ravines and gorges, first winding among the subordinate ridges stretching eastward from the Hala mountains, and then going over the main chain. The mountains bounding the Indus valley on the west are truly a prolongation of the Himalaya. The Sulaiman range takes a southerly direction from the Sufid Koh, and the Toba mountains run parallel and within the Sulaimans, ending in the double summits of Tukatu in about 30° 18′. These peaks attain a height of 12,000 feet, and from them the Hala range may be considered to commence. The Hala mountains then run north and south for 400 miles, and terminate at Cape Monze in the Arabian Sea. Speaking broadly, the Toba and Sulaiman ranges are inhabited by Afghan, and the Hala mountains by Baluch tribes. These Baluch mountaineers, the Kasranis, Bozdars, Khutranis, Kosahs, Lagharis, Gurchanis, Maris, and Bugtis number 130,000 fighting men. The Kasranis extend from the Korak pass for about 50 miles, and muster 1200 thieves. The Bozdars extend along the British frontier for about 20 miles, in a range intersected by the Surgurh and eight other passes. The Khutranis are of Afghan race and live behind the Bozdar hills, surrounded by Biloches. The Kosahs consist of 1200 fighting men, partly in the plains, at enmity with the Bozdars above, and Lagharis below them, but on good terms with the Khutranis. The Lagharis are a quiet, well-disposed tribe, and the Gurchanis a debased, thievish clan of 2000. The strong tribe of Maris, numbering 4000, used to commit raids in the lower extremity of the Derajat, and the Bugtis, subjects of the Khan of Kelat, often serve in the Sind horse and Punjab cavalry.

Thus the Hala mountains, through which the Bolan leads, are inhabited by a Baluch race which is distinct from the Afghans further north. The length of the Bolan pass is 54 miles with a north and south direction, the elevation above the sea at its base being about 700, and at its head 5900 feet. The head of the pass at Karlaki is about 3 miles to the east of, and slightly dominating the Dasht-i-bi-daulat, and it debouches on the plains of Kachi 5 miles to the west of Dadur. The Bolan torrent runs through it from the source at Sar-i-Bolan, which is 10 miles from the head of the pass. The pass is formed by a succession of valleys of various widths (the broadest being the valley of Kirta), bounded by mountain ranges with a general N.N.W. trend.

The Bolan pass is contracted at two principal points. At the entrance from the plains, near Dadur, the road winds through a valley about half a mile wide, with enclosing hills, 500 or 600 feet high, of coarse conglomerate. The torrent flows through a broad, shallow, pebbly bed, winding across and across the gorge. After about 3 miles there is a small valley covered with greensward called Drabi, where the advanced party of Engineers of the invading English army encamped in 1839. On April 12th 1839 the Bombay column of the invading force entered the pass and, going beyond Drabi, halted, for the first night, at Kohan-Dilan (*Khoondye* of Dr. Kennedy).

This part of the Bolan pass is classic ground because here, in most ancient times, was gathered the sacred plant (*Sarcostemma viminale*), a leafless asclepiad, with white flowers in terminal umbels, yielding the *soma* juice which is mentioned in nearly every hymn of the Rig Veda. The *soma* or moon plant was collected on moonlight nights, together with the *arani* wood (*Premna spinosa*) for kindling the sacred fire. The *soma* was plucked up by the roots and, after being stripped of its branches, the bare stems were laid on carts drawn by two rams or he goats, and by them brought to the houses of the worshippers. The stalks were then bruised with stones, and the juice expressed between two pieces of wood. The juice, diluted with water, was then passed through a strainer into a receiving vessel, where it was mixed with ghee and the flour of *wari* (*Panicum miliaceum*), and then allowed to ferment. Finally it was offered to the gods in a scoop or ladle, the vessel and scoop being made of the *Mimosa catechu*. The ceremony of offering the *soma* juice and chanting the Vedic hymns took place in the houses of the worshippers. In those primitive days there were no temples or public places of worship. The localities where these plants, yielding the *soma*, the *arani* wood, and the wood for bowls and ladles, are found, point unerringly to the route by which the earliest Aryan settlers came to India, as well as to the extreme antiquity of the Vedic hymns. They must have been composed when the worshippers of Agni and of Indra were still in the neighbourhood of the western mountains and of the Bolan pass.

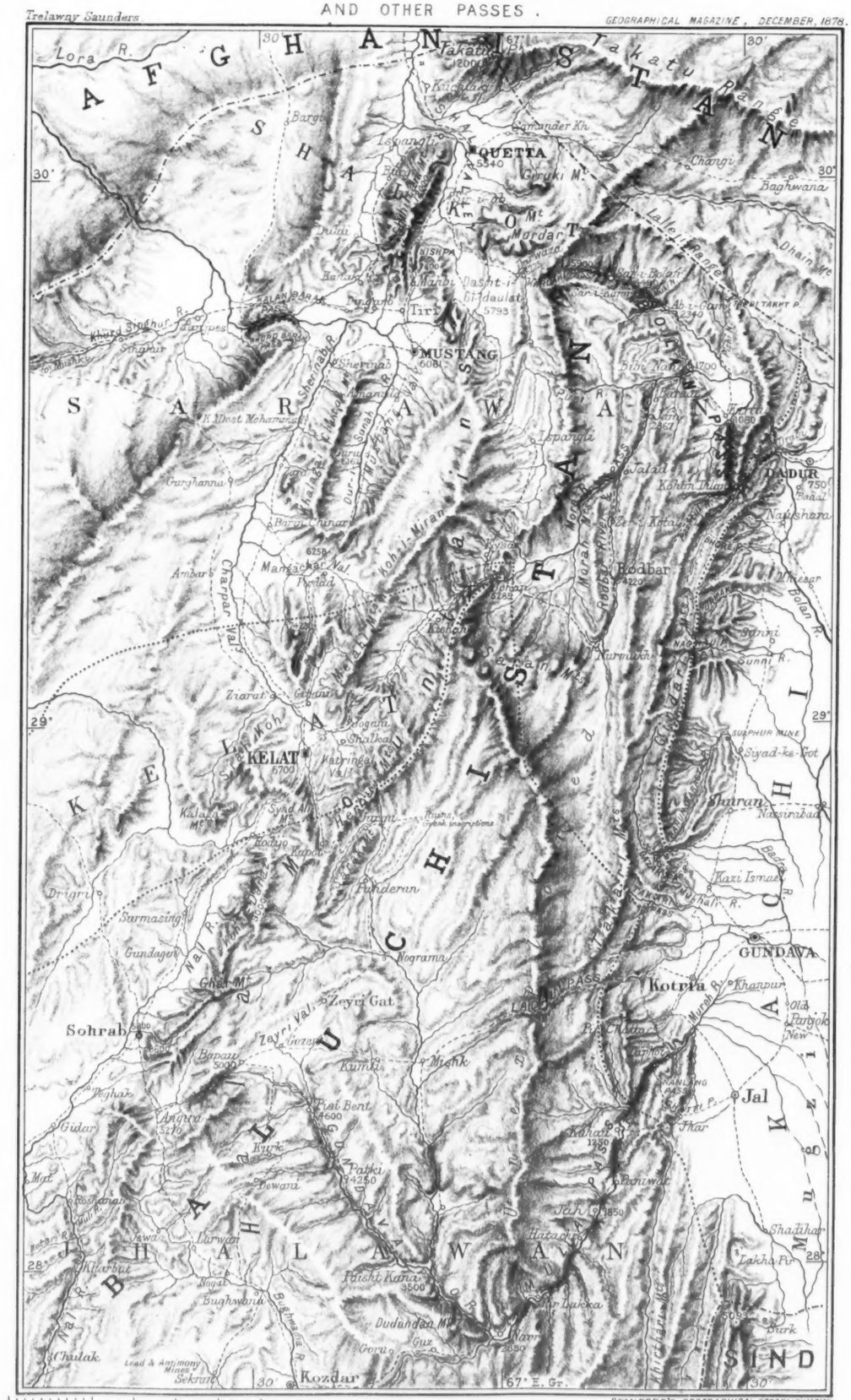
Leaving the region of the *soma* plant the road proceeds over loose stones and shingle to Kirta, the Bolan stream being crossed no less than seventeen times in a march of 10 miles. In this part the pass narrows to a width of from 60 to 70 yards between perpendicular rocks, and then opens out to about 400 yards, still bounded by the same barren hills, about 300 feet high. At the end of the ninth mile, in this march, they recede and leave an extensive plain in which is situated the village of Kirta. Thence the road leads by an open, stony plain for 6 miles to a pass over a small ridge called Jalogir, and thence to Bibi-nani. The road from Bibi-nani to the next halting-place called Abi-i-gûm is still stony, and increases slightly in steepness. Here begins the country of the Bolan Maris.

At Abi-i-gûm (*lost water*) the River Bolan percolates through the pebbles to a lower level, and disappears, coming out again at Bibi-nani, several miles lower down. Abi-i-gûm is 2500 feet above the sea.

From Abi-i-gûm the ascent increases, the valley narrows a good deal, and the stony road is overhung with precipices. At the sixth mile there is a place called Sar-i-Kajur, where are some date trees on

THE BOLAN, THE MULA
AND OTHER PASSES.

Trelawny Saunders — GEOGRAPHICAL MAGAZINE, DECEMBER, 1878.



STANFORD'S GEOGRAPHICAL ESTABLISHMENT.

rising ground to the right of the road, and green fields with a spring of water, the breadth of the valley being about 200 yards. Three and a half miles further on is the encamping ground of Sar-i-Bolan (4494 feet above the sea), in the bed of a torrent, on rough, stony ground. Another 4 miles brings the traveller to a narrow defile, where the hills approach each other to within 60 feet, the road winding in short zigzags between perpendicular rocks rising to a height of 400 feet. This is the worst and narrowest part of the pass, and as the heights are inaccessible it is necessary for an advancing force to crown them for some distance in the rear. The frowning defile extends for three quarters of a mile, after which it widens out again, the road leading by a gradual ascent to the head of the pass, where there is an abrupt rise of a hundred yards to gain the summit of the Karlaki ridge, 5900 feet above the sea. Thence there is a slight descent into the plain of Dasht-i-bedaulat. The Bombay column went through the Bolan pass in six marches, April 12th to 18th, 1839, reaching Quetta on the 20th, and Kandahar on the 4th of May. The route to Kandahar leads from the valley of Shal, across a ridge about 800 feet high, by an ascent of 3 miles, to the valley of Pishin, which is irrigated by the system of *kariz*, or underground water-courses; and thence by the Kojuk pass to Chummum, and over a rocky mountain ridge into the lower valley of Kandahar.

The greatest gradient in the Bolan pass is 1 in 25, and water is abundant except where the river disappears between Abi-i-gûm and Bibi-nani. Grass is only to be found at Kirta, and there is hardly any wood for fuel, the hills being extremely bare. In summer the heat is intense, and the climate excessively unhealthy, while the pass is dangerous during the rains, on account of the freshes of the torrent. The Bolan pass is, however, the principal outlet for trade between Kandahar and Sind, the value in 1862 having been 31,870*l.* for imports and 18,892*l.* for exports. The British army which marched through the Bolan pass to Kandahar, in 1839, numbered 19,100 men in eight columns, besides no less than 40,000 camp followers.

The pass is infested by Maris of Baluch race, and by the Afghan Kakars.

The plateau above the Bolan pass is included in the Baluch district of Shal (Shawl), which is bounded on the east by the mountains overhanging the pass, on the north by the Tukatu mountains and the Toba region, and to the south by Kelat. The inhabitants are Afghans of the Kakar (Cassye Caukers of Elphinstone) tribe. The plain of Shal (Shawl) is 12 miles long by 3 or 4 broad, and its drainage flows to the west, through an opening in the surrounding heights. The elevation everywhere exceeds 5000 feet, so that the climate is cool and bracing, and snow lies for two months in the winter. Here crops of wheat and barley, lucerne, and clover are raised, and the enclosing hills furnish pasture for herds and flocks. Orchards, too, are numerous and produce apples and pears, apricots and figs in great perfection. Quetta (Kwatah) is the chief town in the district of Shal, and some account of it, and of its political importance, will be found in our number for November 1877 (p. 288).

As regards Quetta, it will be sufficient briefly to repeat here that Ahmed Shah, the founder of the Afghan-Durani monarchy, invaded Baluchistan and besieged Kal'at in 1758, but afterwards came to terms with Nasir Khan, the then ruler of Kal'at. The Shal district was placed by Ahmed Shah under the control of Nasir Khan, but temporarily, and as a vassal and tributary to the Durani kingdom, with the condition that the Baluch chief should furnish 7500 horse and camel sawars to the Afghan army in time of war. Quetta is placed within the kingdom of Kabul in Elphinstone's map, dated 1815. When the Barakzi brothers dethroned the Duranis, the Baluch chief gradually ignored the Afghan suzerainty, and the Barakzis never enforced their authority. In occupying Quetta the invasion of Afghanistan really commences, for Quetta does not belong to the Baluch chief, except so long as he keeps his compact to acknowledge the Afghan suzerainty, and observes the conditions on which that district was assigned.

The Government of India caused Quetta to be occupied by a British force, two years ago, by virtue of a Treaty with the Khan of Kal'at, which was made under the following circumstances. When Afghanistan was invaded by a British army in 1839, a detachment was sent to Kal'at to attack the Khan, who was killed in the assault, when the town was taken by storm on November 13th. The British Government then set up a youth named Shah Newaz Khan as ruler of Kal'at, and annexed the provinces of Sarawan and Kach Gundava to the Afghan dominions. As soon as the British left Kal'at, Shah Newaz was deposed and the British representative was murdered. The son of the Khan who had been killed in the assault of the town, named Nasir Khan, was then proclaimed, and the British Government, reversing its policy, acknowledged him. The ceded districts were restored to the Khan of Kal'at, but by a Treaty with our Government, dated October 6th 1841, he was acknowledged to be a vassal to the Rulers of Kabul. The first Treaty was replaced by another dated May 14th 1854, by which it was provided that British troops might be stationed in any part of the territory of Kal'at that might be thought advisable. This Treaty justified the recent occupation of Quetta so far as the Khan of Kal'at is concerned; but the rights of the Afghans over this district, acknowledged as valid by us in the Treaty of October 1841, have never been abrogated with the assent of the Kabul Government.

Quetta is an important position if an advance upon Kandahar is intended. But it is not the key of the Bolan pass, because that pass can be turned and avoided in several directions; while there are other parallel passes which do not lead to Quetta.

The Bolan pass is the best known of several routes from the valley of the Indus to Kandahar, and it is well that it should be secured, if there is to be an Afghan war. But it is doubtful whether it is the best route and it is certainly not the shortest. The Sakhi Sawar pass, to the north, offers a more direct route. In 1653, when Prince Dara marched to Kandahar, he used the Sanghar pass, which comes out between Dera Ghazni and Dera Ismail Khan, and is also far more direct, and perhaps easier than the Bolan. The Sakhi Sawar and Sanghar routes join each other in the mountains.

The existing frontier along the foot of the passes is not, we have been told, a scientific frontier. The meaning of this phrase may possibly be that, states-

manship being a science, it is not a statesmanlike frontier. This no doubt is true. A frontier which necessitates the employment of a police force represented by an army of 12,000 men, and has led to upwards of 25 devastating border wars in 20 years is essentially unscientific. The policy of maintaining such a frontier by a large and expensive force, and by a system of frequent expeditions to burn, kill and destroy, is unstatesmanlike.

In adopting a policy intended to rectify the above state of things there are two alternatives. One, which was suggested by Major Evans Bell a few years ago, is to retire to the Indus, and to restore Peshawur and the Trans-Indus districts, which were taken from them by the Sikhs, to the Afghans, on condition that existing rights are respected. The tribes would then cease to be border tribes, and they would be under the control of the same Government both on the plateaux above them and on the plains below. The other alternative is for the British Government to assume a like position, by advancing the frontier into the basin of the Helmund, holding Kandahar, Kal'at-i-Ghilzi, and Ghazni, and preserving peace in the passes by occupying both ends, and by a firm and just rule. The class of officers that converted the Bhils and Mhairs from savage robber tribes into thriving and peaceable communities would bring the same high qualities to bear upon the Waziris and Afridis, and with the same results. The English are now known along a frontier of several hundred miles as punishers of raids, and enforcers of reprisals. When the mountains cease to be border-lands, and are within our territory, the English will be known as civilizers and benefactors, as they are now known in the country of the Bhils and of the Mhairs.

The rectification of the existing frontier on one of these two principles would, we believe, be a scientific—that is a statesmanlike—process; but the existing policy of incessant frontier wars is anarchical, and therefore unscientific.

CONTINUANCE OF ARCTIC RESEARCH.

III.

THE ROUTE TO BE ADOPTED.

IN the number of this Magazine for September 1877 (p. 223) we enumerated the various routes by which Polar research must be continued, and showed that the reasons for persevering in the great work are not only as strong, but much stronger now than they were in 1875, when it was resumed. In the article in our number for October 1878 (p. 249) we endeavoured to present to our readers a view of the important results which are secured by the labours of Arctic expeditions. With this object we selected one division of the Polar region, namely the known portion of Greenland, and displayed the rich and fruitful results of Arctic exploration in detail, and the wide field of scientific study, in almost every branch of investigation that they open out.

The unknown parts of the Polar area are as rich in those valuable materials which serve to increase the amount of human knowledge as are the known portions of Greenland and of the other Polar lands which have already been discovered. It is consequently quite as important to explore the unknown area, as it was to investigate the geology, physics, and natural history of Greenland and the Parry Islands, of Spitzbergen and Novaya Zemlya, and of the still more inaccessible coasts discovered by the late English Expedition.

The point which it is now incumbent upon geographers to consider with the greatest care, and to decide upon, is the route by which the largest extent of new coast line can be reached and discovered, and by which the most valuable results may thus be secured. There is one perfectly well-ascertained fact in ice navigation, namely, that great progress northwards can only be made along a windward shore. Thus vessels have been able to pass up along the western shore of Novaya Zemlya, along the western shore of Spitzbergen and along the western shore of Greenland. By these routes all that is possible has already been done. These coasts have been explored, and all the rich and valuable results of their examination have been added to the sum of human knowledge. The next step in advance must be to explore some other windward shore extending in a northerly direction for an unknown distance; but until the discoveries of the Austrian Expedition in 1872-74 were made known in 1875 it was not ascertained whether any such coast existed. Now we have good reason for believing that the as yet unexplored western coast of Franz Josef Land presents the same advantages as are offered by the western coasts of Greenland, Novaya Zemlya, and Spitzbergen.

This, then, is obviously the route for the next expedition. But there is one great difference between the Franz Josef route and those which have already proved to be fruitful of useful results along western Arctic shores. In all other cases where the western shores of Arctic lands have been explored, it has been possible and indeed easy to reach them without encountering the difficult and hazardous work of navigating amongst drifting fields or floes of ice. Cape Farewell, where the western side of Greenland commences, is in the latitude of the Shetland Islands, and the southern points of Spitzbergen and of Greenland can also be reached every season without difficulty.

This is not the case with the southern extreme of Franz Josef Land, and the fact on the one hand points out the special difficulty that must be encountered and overcome by the next expedition, and on the other the advantages of the route. For the first time it will be necessary for an expedition, before it reaches its exploring ground, to force its way over an area of the ocean which may be occupied by drifting pack; but, as a compensation, it will, when this obstacle has been surmounted, have attained a position from whence to commence work, which will be more advantageous than that secured by any former expedition seeking to penetrate northwards. For the southern commencement of that windward shore along which it will force its way by ship or sledge, is far to the north of the northern extreme of Novaya Zemlya; to the north of the northern extreme of Spitzbergen; and north of the entrance to Smith Sound.

It behoves us, therefore, to examine with great care the probable nature of the obstacle which must be

overcome before so glorious a position for the achievement of great geographical discoveries can be reached. The Barents Sea is that portion of the Polar ocean which has the coast of Lapland for its southern boundary, Novaya Zemlya on the east, Spitzbergen and the bank down to Bear Island on the west, and Franz Josef Land to the north. It is open to the north Atlantic ocean between Spitzbergen and Norway, and to the unknown Polar ocean between Novaya Zemlya and Franz Josef Land. So far as our present knowledge enables us to judge, a warm current passes from the Atlantic along the coast of Lapland and Novaya Zemlya, keeping the sea comparatively clear of ice; while a Polar current brings down a harvest of ice between Novaya Zemlya and Franz Josef Land, which impinges on the east coast of Spitzbergen. It is across this ice-laden current that an expedition must make its way in order to reach the desired goal, namely the south-west point of Franz Josef Land.

Let us now consider the nature of the ice barrier, and come to some definite conclusion as to when and how it may best be broken through.

The earliest voyagers in the Barents Sea usually crossed it early in the season, and far to the south, near the Lapland coast.

Willem Barents, in the three voyages which he made to Novaya Zemlya in 1594, 1595, and 1596, crossed the sea which now bears his name in July, and met with ice between the 73rd and 74th parallels. In 1608 Henry Hudson, with a small vessel and a crew of 14 men, entered the Barents Sea. He came to the edge of the ice on the 9th of June in 75° 30′ N. and coasted along it until he reached the coast of Novaya Zemlya on the 26th in about 73° N. Captain Wood, in the frigate 'Speedwell,' sailed along the edge of the ice in the same month, during the year 1676, and found it on about the same parallels, from 75° 59′ N. to 74° 40′ N. Many subsequent voyages record the same experience; and we may, therefore, take it as established that in June and July the ice of the Barents Sea stretches across between the parallels of 73° and 76° N.

Along the west shore of Novaya Zemlya, being a windward shore, progress may always be made at the proper season. Barents, in his first voyage in 1594, reached its north-eastern point at Cape Nassau, and in 1596 he rounded the extreme northern end. In 1612 Captain Jan Cornelisz May attained a latitude of 77° 45′ early in August. In 1664 the renowned Captain Willem de Vlamingh, following in the track of Barents, also rounded the extreme north end of Novaya Zemlya, and this feat is now almost annually performed by Norwegian walrus hunters. Witsen tells us that Captain Cornelis Roule went far to the north, in the longitude of Novaya Zemlya, and discovered land, which, if the information of Witsen was correct, must have been Franz Josef Land. But Theunis Ys, one of the most experienced navigators of the seas near Novaya Zemlya, says that to the north there are large fields of ice which would stop the progress of any vessel. In later times, Weyprecht and Payer in 1871, and Beynen in 1878, reached the ice in 78° 4′ N., at a short distance north and west of Cape Nassau; and in 1872 as soon as the 'Tegethoff' left the shelter of the windward shore, she was beset and was drifted during many months, first in the current flowing northwards and westwards; and then by the polar current which took her eastwards in a higher latitude, until Franz Josef Land was discovered. But this is a method of discovery such as no explorer would wish to repeat. The 'Tegethoff' was helplessly drifted during twelve months and never more was free.

The voyages enumerated in the foregoing paragraph show that the sea along the western coast of Novaya Zemlya is always navigable, as it is along all windward shores. But they also show that immediately the sheltering coast is left, there is great risk of being beset in the ice, as occurred to the 'Tegethoff'; and the almost certainty of being stopped by heavy pack, even in August and September, as has happened to every vessel that has steered far to the northwards from Cape Nassau. The ice is coming, on the polar current, from the north-eastward, and the great mass is not checked in its progress until it reaches the land of Franz Josef, part of which is to the westward. Then, apparently, late in the season, its volume is reduced, possibly by obstacles presented by land, and the remaining heavy ice is jammed against the eastern coasts of the Spitzbergen islands.

Experience appears to tell us that, in order to advance northwards in the Barents Sea, the attempt must be made near the centre, at some distance to the westward of Cape Nassau and nearer to the meridian of Wyche Island, the most eastern of the Spitzbergen group.

Only two attemps have ever been made in this direction, and on both occasions the vessels were very small schooners without steam power, namely the 'Willem Barents' and the 'Isbjorn.' One of these attempts was made in August, the other in September, so that they furnish information respecting the position and nature of the ice in those two months.

The Dutch explorers, in the 'Willem Barents,' ran northwards along the meridian of 45° E. and fell in with the ice in 77° 28′ N. and longitude 43° 50′ E. on July 31st 1878. They then proceeded along the edge of the pack in a westerly direction until the 10th of August. It was observed that to the westward the ice was extremely heavy and so hummocky that it would have been impossible to travel over it, while to the eastward the floes consisted of very thin ice which was much rotted by the action of rain and sea. The westward ice seemed to be that which had come down with the Polar current, and was pressing against the east-side of Spitzbergen; and it appeared to Lieut. Beynen that progress northward might be made by pushing north in a steamer between the heavy west ice and the lighter floes to the eastward, in about this meridian of 44° E.

The Dutch explorers inform us respecting the state and position of the ice on this meridian in August. We learn the conditions in September from Payer and Weyprecht, who went northwards on about the same meridian in that month, during the year 1871. The Austrian explorers reached a latitude of 78° N. in 42° E. on the 30th of August, without seeing a fragment of ice, and here there was a heavy long swell from the north. Many whales and several eider ducks were seen. On the 31st the ice was encountered, but loose and widely dispersed, and following along its edge they reached 78° 30′ N. To the westward the ice was dense with a strong blink, but to the north and east it was loose and open. Their report thus agrees

perfectly with that of Lieut. Beynen. Their highest latitude was attained at midnight on the 1st of September, when they were in 78° 48′ N. on about the 42nd meridian. Even here the ice around them presented no serious impediment to progress. Their own progress, in a small schooner, was checked by a stiff contrary wind and not by the ice—the very conditions most favourable for advance in a powerful steamer. But even the 'Isbjorn' could easily have been taken north of the 79th parallel, while the most southern part of Franz Josef Land is south of the 80th parallel—the distance to land was under 60 miles.

To sum up the knowledge of the Barents Sea which has been collected by all the recorded voyages, we gather that during June and July the line of ice stretches along from about the 76th to the 74th parallels; that in August it is much further north, admitting of the advance of a vessel to 77½° N. on the 42nd meridian; while in September, in the same direction, there is nothing to prevent a steamer from advancing northwards across the 79th parallel. Such at least are the experiences of 1871 and 1878, and the former of those years was, we are assured, very far from being an exceptionally open one.

The great aim of an expedition should be to reach the south-east point of Franz Josef Land, in order to press onwards along its western or windward shore, which, arguing from the analogy of all other Arctic windward shores, may be expected to be navigable. The route has been clearly pointed out by those gallant pioneers in the 'Isbjorn' and the 'Willem Barents.' Somewhere about the 42nd meridian, in the first days of September, are the place and time for overcoming the only great difficulty which stands between an expedition and the desired goal on a new and as yet undiscovered windward coast. One advantage in the Barents Sea route is that there are coast lines both to the right and left in the event of disaster. A vessel, during July and August, would have time to establish the necessary depôts at Cape Nassau on one side, at Edge or Wyche Islands on the other, to retreat upon, before making the final advance in September. The practicability of taking these precautions will make it unnecessary to insist upon the expedition consisting of two vessels; although the co-operation of a second ship would always be welcome.

The route to be adopted for the next Arctic Expedition is, then, that by way of the Barents Sea to the western side of Franz Josef Land. The 'Discovery,' a powerful steamer specially prepared for work in the ice, is available for the service, and she should be despatched from England in June 1879. Discoveries of the greatest interest and importance may confidently be anticipated from a successful attempt to navigate her across the Barents Sea to the unknown northern goal. Progress along the western side of Franz Josef Land will lead the expedition far into the undiscovered region. The coast extends northwards for an unknown distance, and Lieut. Payer saw land beyond 83° N. Here then will be a new region offering fresh facts for the geologist, a special *fauna* and *flora* for the naturalist, most valuable investigations in physical science, and the solution of geographical and hydrographical problems of the highest importance.

This country is bound, out of regard for consistency if not from those higher and nobler motives which will influence her, to continue the work that was so well commenced in 1875. "It can be done, and England ought to do it!"

CLEMENTS R. MARKHAM.

ACCOUNT OF THE DUTCH ARCTIC EXPEDITION.

BY ONE OF THE SEAMEN.

THE 'Willem Barents,' commanded by Lieut. A. de Bruyne, sailed on her Arctic cruise on the 5th of May, 1878, and reached Bergen on the 12th. Full accounts of this interesting voyage will be published, and, as soon as the observations have been worked out, geographers will have the scientific results, including an important series of deep-sea soundings with serial temperatures. Meanwhile we present to our readers the first impressions of one of the volunteers of the 'Willem Barents,' a seaman of Zeeland, named Boljé, who is in the pilot service. He wrote his letter during the first part of the cruise, and sent it home from Vardö for publication in the newspaper of his native town of Goes (*Goesche Courant*, August 10th 1878). Every soul on board was animated with a feeling of patriotic zeal, and all took an intelligent and instructed interest in the objects of the voyage. Several of the men kept journals, and Boljé was especially diligent in that respect.

The names of the fourteen persons who were on board the 'Willem Barents' are as follows:—

Captain—A. DE BRUYNE (1st Lieut. R.N.N.)
Lieutenant—L. R. KOOLEMANS BEYNEN (2nd Lieut. R.N.N.)
Lieutenant—H. M. SPEELMAN (2nd Lieut. R.N.N.)
Surgeon—DR. HYMANS VAN ANROOY.
Zoologist—DR. SLUYTER.
Photographer—W. G. A. GRANT, ESQ.
Boatswain—WITTEVEEN (R.N.N.)
Carpenter—VOGELAAR (R.N.N.)
Cook—DE BRUIN (R.N.N.)
Seamen—DE WITT (R.N.N.)
" KAMERMANS (Pilot service).
" BOLJÉ (Pilot service).
" ROOS } Young fishermen from Marken in the
" DE WAART } Zuyder Zee.

Boljé, as a Zeelander, took a special interest in that part of the voyage which included a visit to the old haunts of the Zeeland whalers, near Vogel-sang, in the extreme N.W. of Spitzbergen. His letter is as follows:—

"By a lucky accident we were at Bergen on the 17th of May, 1878, which is a great day of rejoicing amongst the Norwegians; it is the anniversary of the grant of their constitution in 1814. On this day one of our fishermen from Marken went on shore to see the town dressed in his national costume, which occasioned great excitement among the children, while the grown-up people looked at him with astonishment, and the women and girls shook with laughter. As in the evening he returned on board, he was escorted to the ship by a troop of young men, who had been parading the streets with flags and banners. Some of the people took him for a Turk on account of his wide trousers.

"As an acknowledgment of their gratitude to the Netherland Consul for all the assistance he had afforded, our officers presented him with a silver wine cup, with the following inscription, '*Aan Jacob Cramer, Souvenir Etat-Major Willem Barents, 17 Mei,*

1878.' The next day our compasses were tried and the chronometer regulated, and we continued our voyage, knowing well that this was the last spot where we should see civilized people. On the 9th of June, in spite of contrary wind, we passed the Polar circle, and at 12 our flag was hoisted and our national tricolor floated proudly over the waves, where for more than a hundred years it had been a stranger. It was a proud moment when our Commander proposed the health of the crew, which was answered by us with a wish for the success of the enterprise. But that day we met the winter king in a thick mantle of snow. On the 4th of June we saw, for the first time, the midnight sun, which we have never since seen set. It is indeed strange no longer being able to distinguish day from night. At last, after long struggles against foul winds, we reached Jan Mayen Island, over which Beerenberg rises proudly into the air (5,800 feet high) and almost entirely covered with snow: the island resembled a mass of silver. From this time, ever following the edge of the ice, we had every day fresh pictures from nature—sometimes a whale, sometimes seals stretched lazily out on the floe and the loose floating ice, in every sort of shape. Magnificent was the scenery around us, beyond the power of any pen to describe. After leaving Jan Mayen we were often fighting with drift ice.

"On the 18th of June, Spitzbergen was in sight. The time occupied in the voyage between Jan Mayen and Spitzbergen had been taken advantage of for taking deep-sea soundings, and making researches into the flora and fauna of these seas. Spitzbergen has justly earned its name, for one sees nothing but sharp-pointed rocks showing amongst the colossal glaciers, while the sun, throwing a red glow, brings the whiteness of the snow into startling contrast with the deep shadows. After examining the ice to the eastward we anchored off the island Zeeuwsche Uitkijk, and explored the islands around, finding on the island Vogelsang about 100 graves, where, in all probability, Zeelanders rest, having died here in the days when the whale fishery flourished. The Amsterdam Council forbade the Zeelanders to have a boiling place at Smeerenberg, and so they settled at Zeeuwsche Uitkijk, Vogelsang, &c., and established themselves there. We then reconnoitred the edge of the ice to the north, and on the 27th of July we reached the first place of our destination, the island of Amsterdam, the cradle of the Dutch. At the place where we anchored the land was very low and very marshy; we soon found the remains of the furnaces where the boiling places had been, for the most part they were surrounded by heaps of whales' bones. A little further away was the graveyard: some of the stones were still standing, but most had fallen, and many of the coffins were exposed, but they were still in a very good state, and some of the inscriptions were legible. We put the graves in as good order as possible, and in the middle erected the stone sent out by Holland with the following inscription:—

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IN MEMORIAM.
SPITSBERGEN OR NIEULAND,
Discovered
In 79° 30′ N. Lat.
BY THE DUTCH.
Here Wintered and Died, 1634-1635,
JACOB SEEGERSZ AND SIX OTHERS.
Here Wintered and Died, 1634-1635,
ANDRIES JANSZ, OF MIDDELBURG, AND SIX OTHERS.

"We placed this stone fronting the sea, with a cross of immortelles, on which, in white letters, were the words 'Willem Barents,' on a red field with a blue border; we left also a soldered cylinder, containing two letters, one in Dutch and one in English, begging the finders to report to the Admiralty at the Hague that this stone was placed by us on Amsterdam Island, and that we left on the 1st of July. We also left a bottle of Geneva and some biscuits for the finders, and when all was in order we assembled round the stone and the Commander spoke as follows:—

"'In the name of the Dutch people we have fixed this stone: it was their wish to do honour to our forefathers, who in these seas have done so much for the honour and greatness of our country: we have chosen this burial-place because so many of those noble men lie here who have done such great deeds far from their homes. Their bones are scattered and their graves unknown, but Holland does honour to their memory, and their deeds are highly prized by us, and therefore here is the fitting place for this stone.'

"During this speech the photographer, Mr. Grant, took a photograph of us as we stood round. Our readers will be surprised to hear that this photograph was taken in the middle of the night.

"All day the weather had been misty, but at midnight it cleared off. On visiting a small island near, no bigger than the 'Groote markte' at Goes, we succeeded in getting 300 ducks' eggs, and if we wanted roast meat we had only to shoot for half an hour to return laden with birds. As we were becoming surrounded by a mass of heavy ice it was necessary to take to flight, and after fighting our way through ice the anchor was let go in Robben-baai, and we took in a fresh supply of water from a little brook flowing at the foot of a hill, and then again sailed for Beeren Island. Our zoologist had made a splendid collection, and said this was an excellent country for science, and Lieut. Speelman was also satisfied with his magnetic observations.

"Now that we had arrived at 80° 18′ N. lat. the ice hindered any further progress. We had now had it colder than 5° min. (Celsius), however it was still summer. As to deep-sea soundings we had taken five with great success.

"On the 15th of July we reached Beeren Island, and having anchored went on shore to see if the 'Vöringen' (Norwegian steamer) had left anything for us. The first thing we saw was an empty barrel, and no one could believe, nor could I describe, the innumerable birds that flew around us, the rocks could not be seen for the numberless birds that covered them, and it was indeed a bad shot that only brought down five or six. But the greater number fell dead on their nests, and we could not get them. Looking at the rocks we were transported to the middle ages, so great was their resemblance to castles and fortresses, and we all agreed there was nothing in nature to be compared to the Polar world.

"In our wanderings we came to a hut built with planks, that appeared to have belonged to the Norwegians that wintered here in 1864, and not far distant were three graves. Suddenly we heard a cry, 'Hurrah, it is found!' Surely you can guess the cause of this. The cairn with the 'Post of the 'Willem Barents' was found, and this was greeted with a three times repeated hurrah! We brought one box of letters to the shore

and then lit a fire, and prepared our mid-day meal of potatoes, carrots, and bacon, and here Mr. Grant again photographed us. We left a record in a tin cylinder, with a thank-offering of tobacco and a basket of Gouda pipes. The same day the box was opened and the letters distributed, I receiving one from my parents. The President of the head Committee, through our Commander, wished us a happy and successful cruise. You can easily imagine how delighted we were to receive these letters, and how we felt ourselves cheered on by them to proceed on our journey."

Boljé's letter was written at Bear Island, whence the 'Willem Barents' proceeded to Vardö, and then commenced her reconnoitring cruise in the Barents Sea on the 22nd of July. Up to the 27th the explorers encountered very bad weather, and on the 1st of August they reached the edge of the ice, in 77° 54′ N. and 44° 20′ E., and cruised along it for ten days. A month later, in 1871, Weyprecht and Payer were able to proceed fifty miles further north on the same meridian, and even then there was nothing to prevent a further advance. Driven to the south by a furious gale after the 10th of August, the Dutch explorers shaped a course to Novaya Zemlya, and were at anchor for a few days in the Matochkin Shar from August 20th to the 25th. The 'Willem Barents' then proceeded towards Cape Nassau, whence they advanced N.W. until, on September 7th, they met ice in 78° 17′ and 55° 14′ E. This was the most northern point attained. On the 23rd of September the 'Willem Barents' anchored at Hammerfest; and the very successful and, in a geographical point of view, important voyage of the Dutch explorers came to an end on the 12th of October, when the little schooner returned to Amsterdam.

VOYAGES BETWEEN NORTHERN EUROPE AND SIBERIA IN 1878.

THE accounts that have reached us of the condition of the ice this summer in the European and Siberian Polar seas show that it has been exceptionally favourable for navigation. Not only has Professor Nordenskiold been enabled to accomplish a voyage hitherto unique in the annals of Arctic exploration, but several successful voyages have been made between European ports and the mouths of the Siberian rivers. One of the most successful of these cruises was that of the 'Neptune,' Captain Rasmussen, a Danish vessel of 420 tons, which left Hamburg on the 14th July for the mouth of the Ob river.

The 'Neptune' is a slow sailer, and makes only 9 knots per hour, but she is strongly built and otherwise adapted for Arctic voyages. She was freighted by Messrs. Bartning, of Hamburg, and Funk, of Barnaul, with a miscellaneous cargo of petroleum, oils, colours, and various other goods: she had coals for forty-two days, and was provisioned for a year, her crew consisting of eleven Danes and a Russian. Her only chart was that published by the Russian Hydrographic Department in 1872. She reached the Straits of Kara on the 2nd of August, and found them free of ice; but, as there was still ice in the sea beyond, she held a more southerly course than usual in such cases, and made straight for the western shore of the Samoyede peninsula, which she coasted northwards for a distance of about 10 knots, as far as White island. This island she sailed round, being afraid to venture in the narrow channel between it and the mainland. Once in the Gulf of Ob many difficulties were encountered, and the lead had to be constantly kept going, the soundings and other data regarding the river mouth being incorrect and very insufficiently laid down on the chart. The banks are in reality closer together than hitherto supposed.

However, on the 13th August, the 'Neptune' reached Linsita in safety. This place is a fishing settlement, situated at the mouth of the Nadym in the Gulf of Ob, in 72° 14′ E. longitude and 66° 13′ N. latitude, and here the 'Neptune' was to ship the wheat cargo sent down to meet her. Herr Funk and an agent of Herr Bartning (Herr Kühn) came down here by steamer, and the 'Neptune' proceeded to exchange her cargo for 360 tons of wheat, which had been brought down by barge. General Kaznakof, the Governor of West Siberia, who happened to be at Obdorsk at the time, took occasion to repair to Linsita to offer his congratulations to the captain, and manifested a lively interest in the new commercial route.

On the 24th of August the 'Neptune' commenced her return journey. The weather was still cloudy, and drift ice was also occasionally met with, but Captain Rasmussen successfully emerged from the gulf and made for the Matochkin Shar. These straits are very narrow, insomuch so that only two vessels can pass through at once, but the channel is deep and the passage easy. After experiencing some difficulty and delay in entering the straits, Captain Rasmussen successfully passed through, and, after coaling at Hammerfest, reached Hamburg on the 25th of September, the latter portion of her return journey being very rough weather. This is the first instance of a vessel making the double journey to and from Siberia in a single season.

The 'Warkworth' steamship, of Sunderland, Captain Joseph Wiggins, left England for the Ob in the early summer, and on the 4th September left the Nadym with about 500 tons of wheat and linseed for London. During her return journey she grounded twice, and had to throw overboard about a couple of hundred tons of grain to right herself. She sighted the Yugor straits on the 14th September, and reached the Thames on the 1st of October.

Turning to the voyages undertaken to the Yenisei, one of these appears to have been less successful. Towards the end of June, Baron Knoop, of Bremen, chartered the steamers 'Louise' and 'Moscow' and three lighter-vessels, and freighted them with a miscellaneous cargo to be exchanged for Siberian wheat for the European market. The 'Louise,' however, with a Norwegian pilot on board, got stranded in the vicinity of a small place called Brönö, on the Norwegian coast, and had to put into Drontheim for repairs. In order to prevent the enterprise from falling through, the Norwegian steamer 'Zaritza,' 313 tons, Captain Brunn, was engaged to convey the undamaged portion of the cargo to the Yenisei mouth, which she reached, in company with the 'Moscow,' at the beginning of September. The 'Zaritza' then, unfortunately, ran aground, but the cargo having been transferred to the 'Moscow,' which proceeded up to

Yeniseisk, she managed to get afloat again and returned to Hammerfest in company with the 'Fraser.'

This last-named vessel was despatched by Herr Sibiriakoff, in order to bring back Siberian wheat from Dudinko, in company with the 'Express,' 306 tons, a Swedish steamer under the command of Captain Gundersen, which acted as coaling and provision tender for the Swedish expedition, and which also took with her sixty tons of salt for Siberia. On the 9th of August, when opposite the Yenisei mouth, both these vessels separated from the Swedish expedition, after having transferred the coals and provisions to the Swedish expedition, and then proceeded up stream and took in a full cargo of wheat, rye and tallow. The return journey, according to the Bremen *Geographische Blätter*, was taken through the Matochkin Shar, and in fine weather and with little obstruction from the ice; but a Swedish paper, the *Nordlands Posten*, tells a different tale, and says that the 'Express' encountered a terrible storm at the outset, and was hemmed in by the ice for seventy-five hours, but sustained no material damage.

In connection with these voyages the experiences of the 'Zaria' ('Dawn') vessel, Captain Schwanenberg, possess a good deal of interest. This enterprise had its origin in a previous journey of a very unfortunate character. M. Michael Sidorof, a member of the Russian Geographical Society, had for years endeavoured to open up a commercial route between Siberia and Northern Europe, and thus to find a maritime outlet for the vast products of the former country. His first venture was made in 1876, when he chartered the 'Aurora Borealis,' a small vessel, built in Yeniseisk, which descended the Yenisei as far as the Malobrekhovsk islands, where the crew were compelled to winter. Their hope was to continue the voyage in the spring, but unfortunately when the ice began to break up, their vessel was a good deal nipped and cast ashore about 2 versts inland. During the winter, Numelin, the mate, and four others endured the greatest suffering. Their stock of provisions was very meagre, and they had nothing but a wooden hut hastily put together to shelter them from the rigorous cold. During the whole of the time, however, Numelin took three observations of the temperature per diem, and these will prove of scientific interest, although the freezing of the mercury often precluded any exact measurement of the cold. On the 23rd September the little party retired to their hut for the winter, and a fortnight later one could walk across the Yenisei over the ice. The thermometer did not rise to freezing point till the 26th April, and the sun was seen again on the 7th January, after a night of two months' duration.

The conditions under which this intense cold was endured were such that it is a matter of surprise that the whole party did not perish outright. On the 29th April the mate Meiwald and three men arrived at the hut and found Numelin seriously ill and three of his companions dead, the fourth, the assistant-surgeon Chesnokof, having left in December for Cape Tolstoi, and having been probably devoured by wolves on the way. As soon as Meiwald and his three companions arrived they begun to disengage the vessel from the weight of superincumbent snow. The 'Aurora Borealis' had suffered a good deal, and there was a foot and a half of water in her hold. On the first of May they extricated her, but a few days after a snow-storm came on and buried her again. The ice on the river began to set in motion about the first days of June, and on the 6th the waters rose so rapidly and strongly that the little vessel was carried more than a verst and a half inland. The following day the whole party, with two dogs, were obliged to take refuge on the roof of their wretched dwelling hut, and here they remained for eight days, surrounded by the waters which rose to a height of fifteen feet above their ordinary level. The roof was only a foot above the surface of the water; the party had nothing but a little firewood and some provisions as stores, while they were in imminent danger of being swamped by a further rise of the waters, a contingency which induced them to secure a boat in case of being compelled to abandon their precarious perch.

As far as the eye could reach the surrounding country was all under water, and the hut where the seamen had taken refuge was in imminent danger of collapse; they were continually engaged in fending off the floating fragments of ice with poles; and for a week, during which time the 'Aurora Borealis' broke up, the entire party was in a state of great anxiety. The birds were completely at a loss where to alight; one perched on Meiwald's head and others on the dogs. On the 11th June the waters began to abate, and two days after Meiwald and his companions were enabled to descend into their hut, which had been entirely cleared out by the inundation. The following day a light smoke was seen on the horizon, and at eleven o'clock in the day the steamer 'Alexander,' with Captain Schwanenberg and a sailor on board, arrived.

Although Captain Schwanenberg found his men in such a state of destitution, he would not abandon his projected expedition, and after a great deal of trouble he succeeded in obtaining another vessel, also constructed at Yeniseisk, but smaller than the 'Aurora Borealis.' This new craft, the 'Dawn,' was 50 feet long by 14 feet wide; she was flat-bottomed, and drew only 2½ feet of water; she was most insufficiently provided with instruments, and actually had no chronometer on board, while the sounding line was only two fathoms long. The captain took with him two pilots, a sailor, and a cook. The Russian flag was hoisted, and on the 9th of August the 'Dawn' emerged into the Sea of Kara. On the 12th, the captain sighted White Island, which no one is known to have ever visited, and landing there planted the Russian standard and buried a bottle with an account of his visit written in Russian and English. On the island were seen numerous traces of reindeer and bears. The following day the 'Dawn' set sail for the Matochkin Shar, but the voyage was one of great difficulty owing to the prevalence of drift ice, the thickness of the fog, and occasional icebergs. Finding that the entrance to the Matochkin Shar was completely blocked, Schwanenberg made for the Straits of Kara, which he entered on the 18th August. Here a violent storm arose, and the force of the current would have driven the vessel on to the rock-fringed coast of Novaya Zemlya, had it not been for the courage and coolness of Schwanenberg and young Numelin, who saved the vessel when destruction appeared inevitable.

On the 30th August the 'Dawn' cast anchor in

Vardö, and on the 19th October 1877 was towed into Cronstadt.

The chief obstacle to the opening up and more general utilisation of the maritime route between Siberia and Northern Europe, is undoubtedly the want of reliable surveys. The Bremen *Geographische Blätter* commends this pressing need to the attention of the Russian Government, but it appears to us unlikely that that Government will stir in the matter, although it is clearly to their interest to do so. In our opinion there is not a more promising field for a summer "Arctic Expedition" than these northern seas, and were our present ministry to sanction the despatch of a special surveying vessel to the Sea of Kara and the mouths of the Yenisei and Ob rivers, there can be no doubt that the results, both practical and scientific, would be inexpensively secured and of high value. A tolerably complete survey of the two river estuaries would not probably occupy more than a couple of seasons, and, besides the soundings of the various channels, much useful data would be acquired regarding the state of the ice, the currents, &c. The excessively high insurance rates, which now form a discouraging bar to trade, would naturally fall in proportion as the hydrography of the seas became better known and voyages more frequent, and the now pent up wealth of Siberia would find a natural outlet towards our shores, to the mutual advantage, both commercial and political, of England and Russia.

C. E. D. B.

THE DARIEN INTER-OCEANIC CANAL.

IN our number for April 1878 (p. 82) we gave some account of the surveys executed by Lieut. Lucien N. B. Wyse on the Isthmus of Darien, with a map. That officer has since presented a report to the International Commission, on his second visit to the Isthmus, with reference to an inter-oceanic canal. The following *resumé* of this report is taken from the *Panama Star*.

The commission arrived at Panama from San Nazaire on the 29th of November, 1877, and was almost immediately joined by Mr. Sosa, who had been named for the second time, the delegate of the Colombian Government, and Mr. L. Verbrugghe who arrived from Brazil by way of the Straits of Magellan. Mr. Lacharme was unable to join the expedition for several weeks, a delay which was improved by Lieut. Wyse in making a new survey of the Isthmus of San Blas, leaving here on the 6th of December and ascending the Bayano and its tributaries to the right of Mamoni. Neither Commanders Selfridge nor Lull had made exact studies of that route, except on the Atlantic side. There still existed doubts, notwithstanding the labours of Messrs. McDougald and Sweet, due to the generous action of Mr. Kelly, as to the length of the tunnel necessary for this line, which is undoubtedly the shortest between the two oceans. The Bayano in its upper portion cannot be utilised for a canal on account of its crooked course and the hardness of the rock in the neighbourhood, an objection which may be made also to Aguas Claras. From tide water in the River Teralbe, an affluent of the Bayano, at the point nearest the Atlantic, the distance is less than 30 kilometres to the north coast. Mr. Wyse gives credit to the route traced and published according to the explorations of McDougald. Among unimportant defects the most important is that relative to the Salto, which he found a mile above the confluence of the Chararé and not below. In general the rocks of the valley of the Upper Mamoni are harder than those of the Darien south, and less compact than those of the Isthmus of Panama properly so called. Mr. Reclus ascertained that the direction of the valley of the Teralbe is satisfactory so far as the making of the open excavations are concerned, but the tunnelling would not be less than by the route of the Chararé. The tunnel between Nercalegua and Mamoni would be at least 16 kilometres long. Notwithstanding the difficulty and cost of this immense work—its only difficulty in fact—Mr. Wyse is of opinion that on account of the shortness of the entire route, and its many advantages in other respects, any International Commission formed to decide on the course of the canal, should seriously consider its advantages. The length of the tunnel on the Tiati-Acanti route will be somewhat less than *viâ* San Blas. The Commission returned to Panama from this labour, and on the 29th of December departed for the Southern Darien, and on January 8th entered the River Tiati. A track was here opened in a right line to the stake No. 1091 *bis*, planted by the expedition of the preceding year.

Mr. Wyse left Mr. Reclus in charge of this work, and returned to Aspinwall with Mr. Verbrugghe to await Admiral Maudet, chief of the French squadron in the West Indies, who had formerly promised, with one or more vessels, to assist in the hydrographical survey of the anchorage at Acanti and determine its merits. The Admiral, however, could not come personally, but afterwards sent the steamer 'Du Petit Thouars.' Until the arrival of this vessel Mr. Wyse occupied himself and associate in the examination of the valleys of the Rio Grande, Pedro Miguel, and of the Caimitillo, traversed by the Panama railroad, and several localities in the neighbourhood of the route proposed by Garella in 1843. On the 4th of February he embarked in the 'Du Petit Thouars' for Acanti, examining the coast carefully on the way. With very slight differences the old Spanish charts were found to be correct. Acanti has a good anchorage, a breakwater can easily be made from the rocky point at its northern entrance, which would make a well-sheltered harbour of 30 hectares, or about 85 acres. Between the Bay of Caledonia and the Atrato, Acanti is the only place where it is possible to make a sheltered port. On his return from the survey of Acanti, Wyse met his party at Panama, who had concluded their labours on the Darien, and immediately directed attention to the survey of the various routes proposed by Garella, Hughes, Totten, Lull and Menocal, on the Isthmus of Panama. Mr. Garella had proposed a canal which should terminate to the west of Panama, and which should have thirty-five locks and one tunnel of 8 kilometres, while Messrs. Lull and Menocal had proposed—with but little enthusiasm, however—a canal which should be fed by the Chagres, and would have twenty-five locks. At the conclusion of these various studies, Messrs. Wyse and Verbrugghe visited Nicaragua and passed over the route projected there. On the 1st of July he embarked for California, *en route* for

Paris, stopped on the way at Washington, where he had the honour of interviews with Admiral Ammen, Commodores Patterson and Franklin, Professer Nourse, Commanders Lull and Selfridge and Mr. Menocal, all of whom had taken part in canal surveys at various points. Mr. Wyse sums up the various routes proposed and advises that an Interoceanic Commission should be called by M. de Lesseps to decide which is preferable. He argues that the project is now sufficiently ripe for action on the part of Governments desiring to take part in the great work. The routes mentioned are six in number, as follows:

In Colombia—(1) That of Choco, with locks and a tunnel, *viâ* Atrato-Napipi, surveyed by Selfridge.

(2) The Southern Darien, Atrato-Cacarica-Tuira, locks and a tunnel, surveyed by the International Commission.

(3) The Southern Darien, Acanti-Tiati-Tapisa Chucunaque, on a level, with one tunnel, surveyed by the International Commission.

(4) The Western Darien, San Blas-Bayano, on a level and with a tunnel, surveyed by McDougald, Selfridge and the Commission.

(5) Panama: Colon-Chagres-Panama, with locks by Lull. Colon-Chagres-Rio Grande-Panama, on a level, with a tunnel, by the International Commission.

(6) In Nicaragua, San Juan del Norte—Brito, with locks, surveyed by Childs and Lull.

Lieutenant Wyse acknowledges his indebtedness to Presidents Correoso and Aizpuru for the unequivocal expressions of sympathy and good will which they manifested towards the expedition, and also to Commander Maquay of Her Majesty's ship 'Fantome' for kindness and courtesies offered by him.

Reviews.

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THE TRANSVAAL OF TO-DAY.*

IN our number for February 1873 (p. 34) we gave an account of the Delagoa Bay sovereignty question, which was so unwisely submitted to arbitration. This paper was illustrated by a map. Our number for February 1877 (facing page 27) contains a more accurate map of the South African Republics, with statistics of areas and populations. In reviewing the handbook by Mr. Silver, and the pamphlet on South Africa by Mr. Campbell Johnston, in our number for November 1877 (p. 299), we furnished particulars respecting the physical geography and history of the Transvaal Republic. and stated the pretexts on which this State was annexed by Sir T. Shepstone on the 12th of April 1877, in spite of the solemn recognition of its independence by the British Government on the 17th of January 1852.

The pretexts for the annexation of the Transvaal Republic were identical with the pretexts for the partition of Poland. It was alleged that the Transvaal Republic was dangerous to its powerful neighbour, owing to her internal weakness and discords; that her Government could not preserve order, and that it was unable to cope with Kafir encroachments. It was added that the Boers were cowards and slave-owners, and that the majority of the people desired annexation.

Mr. Aylward, in the very interesting work now before us, brings these assertions to the test of fact. He proves that the Transvaal Republic was not in the condition that was alleged as a pretext for annexation, and that her Government was not only able to cope with the Kafir revolt, but had actually suppressed it. He refutes the calumnies respecting the Boers, showing that their retirement from the frontier in the summer, which was imputed to them for cowardice, was a necessity in order to save their horses; and that they are not slave-owners. He also exposes the inaccuracy of the statement that a large proportion of the inhabitants of the Transvaal desired annexation. The great majority of the Boers did not desire it.

The annexation of Transvaal has exasperated the Boers, injured the natives, and thrown the whole country into a state of anarchy.

The assembled Volksraad of Transvaal, and the executive Government of the Republic, solemnly protested against the annexation on April 11th, 1877, at the same time acknowledging that the Republic was unable to maintain the right and independence of the people with the sword, against the superior power of Great Britain. The Government, however, resolved to send a commission of Delegates to Europe to lay the desires and wishes of the people before Her Majesty's Government. The commission consisted of Dr. Jorissen, the Attorney-General, and S. J. P. Kruger, the Vice-President of the Republic. The efforts of the Delegates were unavailing, and then a petition was signed by upwards of 6600 qualified electors of the Republic, entreating the English Government to restore to them their liberty and their country. This protest was answered by an arbitrary proclamation dated March 11th, 1878, threatening to bring "to justice the seditious agitators who have endeavoured to mislead the people." The document is such an one as might be found among the archives of Russian Poland; but it is not in keeping with the traditions and the usages of a free country.

Nevertheless, the people of Transvaal once more appealed to the justice of England, deputing Mr. Kruger and Mr. Joubert to submit, on their behalf, their solemn protest signed by thousands of the citizens. They represented that the instructions to Sir T. Shepstone enjoined him not to proceed to the extreme measure of annexation unless the inhabitants or the legislature desired to become British subjects. They then submitted a resolution of the Volksraad of the Republic, dated February 22nd, 1877, calling upon the Executive to maintain the independence of the country; a resolution of the Executive Council, dated April 11th, protesting against the annexation; the protest of the President of the Republic; and a memorial in support of the protest signed by 6591 out of the 8000 electors, and dated January 7th, 1878. They further submitted that the petitions in favour of annexation represented a very small proportion of the inhabitants of the country, were got up after the annexation, and were signed by traders and gold diggers (about 1350 in number), and not by the

* *The Transvaal of To-day: War, Witchcraft, Sport, and Spoils in South Africa.* By Alfred Aylward, Commandant Transvaal Republic; Captain (late) Lydenberg Volunteer Corps. (Blackwood, 1878), 8vo, pp. 428 and map.

6650 farmers upon whom is laid the task of supporting the State by the produce of their farms, and upon whom devolves the duty of defending the country or fighting for its rights. The other allegations of Sir T. Shepstone are ably met and refuted, and the memorial concludes with an earnest prayer to the British Government to restore to the country the independence *which was guaranteed by the Convention of* 1852.

These documents establish the lawless injustice of the annexation, and we think that every reader of Mr. Aylward's book will be convinced of its impolicy. If ever people deserved their independence, these people are the Boers of South Africa. They have sought it in the wilderness, they have endured hunger and sufferings of all kinds for it, they have fought gallantly for it, they have proved that they deserve it by the practice of those virtues which in all ages have been recognised as titles to freedom, and they finally won it by a Convention which the British Government ratified and ought not to break.

Mr. Aylward introduces his readers to the inner life of the Boers, and recounts their famous wanderings, the bravery of the men, and the heroic conduct of the women, describing their domestic habits, their occupations, and their hospitality. He also gives an account of the Kaffirs and of the chief Secocoeni, of the operations of the Lydenberg Volunteer Corps, and of the resources, the superstitions, and the sports of this part of South Africa. Finally, he tells the story of the annexation. The worst part of this story is that even the pledges voluntarily made in the annexation proclamation have been broken. A promise was then given that the Constitution of the Republic should be continued, that its laws should be maintained, and its pledges fulfilled. Sir T. Shepstone found the Volksraad in session. Without any authority he dissolved that body, and has since governed the country without the pretence or form of constitutional support. It is now eighteen months since the Volksraad last sat; and to this lawless rule is to be attributed the discontent, impoverishment, and ruin of the country.

PHYSICAL GEOLOGY AND GEOGRAPHY OF GREAT BRITAIN.*

THE demand for the publication of a fifth and greatly-enlarged edition of Professor Ramsay's *Physical Geology and Geography of Great Britain* is a practical recommendation of this valuable work. The most important feature in the additions is an account of the British formations, showing their topographical range, lithological characters, and the general nature of their fossil remains. As stated by the author, this part of the work constitutes a condensed manual of British stratigraphical geology from the Laurentian to the latest Pliocene strata, and coming from such an authority as Professor Ramsay, aided by Mr. Etheridge in the palæontological sections, we may rest assured that as a text-book of British geology it is unsurpassed.

To geographers remembering Murchison's saying that "Being a geologist I am an ancient geographer," the most interesting feature in the book is where the writer endeavours to give us an idea of the physical geography of Great Britain at the close of each successive geological epoch. No one can write with higher authority on this subject than Professor Ramsay, and no one can rise from the reading of those portions of his work without realising to a greater or less extent the theory of Hutton, "that, in the known geological history of the world, the course of events has never been disturbed by universal paroxysmal catastrophes, but that the course of change has been similar to that of the existing economy of nature."

Instructive as are Professor Ramsay's descriptions of the physical geography of Great Britain at the close of the successive epochs of the Palæozoic, Mesozoic, and Cainozoic periods, we must admit that our chief interest centres in the chapters devoted to the glacial epoch. In them the writer appears in his element, his intimate acquaintance with the glacial evidences in the highlands of Scotland, Cumberland, and Wales enables him to grasp each topographical detail, and weave them into one harmonious whole. "The general result has been that the whole of the regions of Britain mentioned have literally been *moulded by ice*—that is to say, the country in many parts was so much ground by glacier action, on a continental scale, that, though in later times it has been more or less scarred by weather, enough remains of the effects to tell to the observant eye the greatness of the power of moving ice. Suddenly strip Greenland of its ice-sheet and it will present a picture something like the greater part of Britain immediately after the close of this glacial period."

In a chapter full of interesting details, Professor Ramsay vigorously urges his theory, that moving ice has been the origin of certain lakes—for instance, the lakes and fiords of the Western Highlands of Scotland, the Lake of Geneva, the lakes of Lucerne, Zug, the Wallen See, Zurich, and Constance, and to those who are conversant with the glacial phenomena of the Arctic, Antarctic, and Alpine regions of the globe it would appear that the author has not over-estimated the denuding powers of ice. The concluding chapters, on soils, the relation of the different races of men to the geology of the country, and the industrial products of the different geological formations of Great Britain, contain a vast amount of geological information, condensed and brought down to the latest date.

* *The Physical Geology and Geography of Great Britain.* By A. C. Ramsay, LL.D., F.R.S., Director-General of the Geological Surveys of the United Kingdom. (Stanford, 1878.)

Statistics of Chief Cities and Towns of Europe.—A statistical paper of considerable interest has been compiled by M. F. R. Von le Monnier for the *Mittheilungen of the Vienna Geographical Society*. It consists of a series of tables giving the number of cities and towns with upwards of 20,000 inhabitants in the various countries of Europe, and supplementary tables showing the total and the relative number of these in the different countries, as well as less detailed tables showing the total number of towns with 2000 inhabitants and upwards.

Log Book.

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The Seal and Whale Fishing for 1878.—This has been a most unlucky year for the whaling fleet, and the yield is smaller than in any previous season for the last ten years. The vessels engaged were as follows:

1. 'Arctic' (Capt. Adams).
2. 'Aurora' (Capt. Bannerman).
3. 'Esquimaux' (Capt. Yule).
4. 'Camperdown' (Capt. Gravill).
5. 'Polynia' Capt. Kilgour).
6. 'Intrepid' (Capt. Nicoll).
7. 'Narwhal' (Capt. M'Lennan).
8. 'Nova Zembla' (Capt. Grey)
9. 'Victor' (Capt. Adams).
10. 'Ravenscraig' (Capt. West).
11. 'Erik' (Capt. Walker).
12. 'Active' (Capt. Fairweather).
13. 'Harald Haarfager' (Capt. Brün).
14. 'Jan Mayen' (Capt. Deuchars).
15. 'Mazanthien'

In 1877 the experiments were made by Messrs. Alex. Stephen & Son of sending the 'Arctic' and 'Aurora' to the Newfoundland seal fishing, and owing to the success of that enterprise the Dundee Seal and Whale Fishing Company resolved to send the 'Esquimaux' and the 'Narwhal' to the fishing last season. The catches at Newfoundland and Greenland are as follows:—

NEWFOUNDLAND.

	Seals.	Tons.
'Arctic'	34,100	450
'Aurora'	12,000	200
'Esquimaux'	3700	50
'Narwhal'	700	10
	50,500	710

GREENLAND.

	Seals.	Tons.
'Camperdown'	150	2
'Polynia'	65	1
'Intrepid'	3600	48
'Jan Mayen'	7800	80
'Nova Zembla'	5000	68
'Ravenscraig'	3846	50
'Erik'	4600	55
'Active'	4100	56
'Harlad Haarfager'	4500	45
	33,661	405

The total catch at both fishings is thus 84,161 seals, calculated to yield 1,115 tons of oil. The catch in 1877 at both fishings was 80,130 seals, yielding 1129 tons of oil. This year the catch of seals has been greater by 4031 seals, but the produce of oil is 14 tons less. Taking the value of seal oil at 50*l.* per ton, including the skins, the total value of the catch this year is 55,750*l.*, or 700*l.* less than last year.

The following shows the result of the whale fishing at Davis Straits, the whole of the vessels at the seal fishing, excepting the 'Nova Zembla' and 'Harald Haarfager,' taking part in it, and in addition the 'Victor' and 'Mazanthein':—

	Whales.	Tons Oil.	Tons Bone.	
'Arctic'	1	17	1	'Esquimaux,' clean
'Jan Mayen'	2	40	2	'Camperdown,' lost.
'Polynia'	1	17	1	'Intrepid,' clean.
'Narwhal'	1	20	1	'Victor,' clean.
'Aurora'	1	18	1	'Ravenscraig,' clean.
				'Erik,' clean.
				'Active,' clean.
	6	112	6	'Mazanthien,' clean.

The whale oil and bone of this year's yield is valued at 10,080*l.* being 77,390*l.* less than 1877. The total value of both the seal and whale fishing is 65,830*l.* as against 144,920*l.* for 1877.

For the sake of comparison, we give the results of the seal and whale fishing for the last ten years:—

SEAL FISHING.

	Ships.	Seals.	Tons.		Ships.	Seals.	Tons.
1869 ...	11	45,600	480	1874 ...	11	45,742	576
1870 ...	9	90,450	870	1875 ...	12	45,395	450
1871 ...	9	65,485	648	1876 ...	11	53,776	578
1872 ...	11	40,621	420	1877 ...	14	80,130	1129
1873 ...	11	25,594	265	1878 ...	13	84,161	1115

WHALE FISHING.

	Ships.	Tons.	Tons Bone.		Ships.	Tons.	Tons Bone.
1869 ...	10	140	7½	1874 ...	9	1285	65
1870 ...	6	760	40½	1875 ...	12	752	40
1871 ...	8	1165	61½	1876 ...	13	891	44
1872 ...	10	1010	54	1877 ...	14	983	44½
1873 ...	10	1352	69	1878 ...	13	112	6

There was an extraordinary accumulation of ice in Melville Bay, and none of the whalers succeeded in reaching the "North Water." We regret to have to record the total loss of the 'Camperdown,' commanded by Captain Gravill, who had been many seasons in her, among the ice. Captain Gravill's father, who commanded the 'Diana' when Sir Leopold McClintock went up in the 'Fox' in 1858, lost his life in this perilous service.

The whaling fleet left Dundee about 2nd May, and the ships had fine passages out, falling in with the ice at Hare island (the north end of Disco). No open water was seen from there, but the ships forced a passage—some of them as far north as Willcox Point. South-west winds were continuous, blocking up Melville Bay with large quantities of very heavy ice, which the fleet was unable to penetrate, the ice being heavier than it had been for many years. Seeing no chance of getting through Melville Bay this season; all the vessels returned south, in the hope of getting round the tail of the ice to the west side of the straits. By the 17th of July most of the fleet had succeeded in reaching the west side, and proceeded north as far as Lancaster Sound, but unfortunately too late for the fishing. The 'Arctic' went up Prince Regent inlet early in August, and there got one whale. The rest of the fleet dodged about in the vicinity of Cape Kater, and the 'Camperdown,' 'Narwhal,' 'Polynia,' and 'Aurora' got one whale each, while the 'Jan Mayen' got two whales. The 'Camperdown' was severely damaged amongst the ice, and had to be abandoned in Exeter Sound on the 10th of October, the crew being brought home by the other ships. Seeing no prospect of adding to the catch, the fleet bore up for home on the 13th October. The 'Erik,' however, went south to Cumberland Gulf, but meeting with no success there, she also bore up for home on the 19th October, and the fleet has now all arrived at Dundee.

Turfan in 1878.—According to the *Turkestanskiya Viedemosti*, Turfan contains 10,000 inhabitants, chiefly Sarts and a few Dungans and Chinese, and can be reached from Kuldja, *viâ* Shikho, Manass, and Urumchi in eighteen days, reckoning 40 versts as a day's march. Formerly, *i.e.* during the Chinese rule of the Ili district, the direct route was through the Yolduz pass, being much shorter, namely thirteen days. Turfan itself has no flowing stream, and the water for irrigation purposes is derived from wells. The summer is exceedingly hot, particularly in June and July, when the inhabitants are obliged to prolong their *siesta* till late in the afternoon. The buildings in the town, as well as in the environs, are mostly of clay, near to which there are cavities, made to shelter the inhabitants in the time of great heat. Rain is very scarce, and snow almost unknown.

The population is chiefly engaged with horticulture, agriculture, and particularly with the production of cotton. The gardens produce peaches, pomegranates,

grapes, apples, pears and plums, whilst cotton sown in open field is collected three times a year. The cotton plant reaches a height of about four feet and a half. The first growth of the cotton is in quality inferior to that of Bokhara, the second is still worse, and the third is scarcely equal to that produced in the south of the Kuldja district. Up to the time of the Dungan rebellion, cotton was exported to the interior of China; under Yakub Beg it went to Aksu and Urumchi, although in a limited quantity, for the greatest part was worked up for home use. The prices then were, for one pud, 2 roubles and 70 kopecks of the first growth, 2 roubles 10 kopecks of the second, and 1 rouble 90 kopecks of the third growth, which have, however, after the Chinese conquest, greatly risen, amounting now to 6 roubles the first, 4 roubles 80 kopecks the second growth (one pud). This extraordinary rise is chiefly due to the recent export to the north-western frontiers of China, which was impossible during the rule of the late Amir Yakub Khan, and to the increasing wants of the Chinese army.

The imports to Turfan from Shikho and Manass consist chiefly of chintzes bought in Kuldja at 15 and 16 kopecks the arshine, and sold for 20 and 25 kopecks. As for the rest, the production of cotton in Turfan, Lyuk-chun, and the environs was never of a considerable extent, for the export of former times to the interior of China came not only from Turfan, but also from Kucha, Aksu and Uch-Turfan, where cotton is much cultivated and sold from 7 roubles 70 kopecks to 5 roubles 20 kopecks the pud. Trade here is now, as everywhere in Eastern Turkestan, at a standstill, owing to the continual depredations of the Chinese soldiers and to the unruly state of the country. The Lin-Sho-Darin, the Chinese Viceroy of Eastern Turkestan, is now engaged in appointing civil officials, amongst whom a good number of Sarts will be found, who are already letting their hair grow (viz. the tail), and are anxious to get the distinction of coloured buttons. Turfan is garrisoned by 1000 soldiers.—(A. V.)

Mr. A. Keith Johnston's Expedition.—This enthusiastic young geographer and traveller left England in November 1878 to explore the country between the east coast of Africa and the northern end of Lake Nyassa. The Committee of the African Exploration Fund could not have selected a man more admirably fitted for the work. The son of an illustrious geographer, young Keith Johnston has inherited his father's love for the science, and he unites the qualifications of a skilled draughtsman and geographical student, with experience as a traveller and explorer. During 1874-75 he was in Paraguay, and the valuable results of his work consist of an article in our number for July 1875 (p. 201), of an exhaustive paper read at the Bristol Meeting of the British Association and printed in our numbers for September, October and November 1875 (pp. 264, 308 and 342), and of a map of Paraguay, on which his own field work is combined with that of Azara, Page, Dugraty, Mouchez, and Wisner. As we announced in our September number, Mr. Keith Johnston will start from the end of the caravan road now being constructed by a party of English engineers from Dar-es-Salaam (25 miles south of Zanzibar), and direct his course to the northern end of Lake Nyassa. It is rare that such high geographical qualifications have been united in an African traveller, and we may, therefore, anticipate most valuable results from his labours.

Marno's Journey in Eastern Africa.—Herr Marno contributes to the *Vienna Geographical Society Mittheilungen*, an account of his journey made in January, February and March last, from Zanzibar to Saadami, on the African coast, and thence inland to a place called Koa-Kiorra, situated 283 kilometres distant, on the route followed by Cameron and Stanley. The greater portion of his route, however, lay to the north of the route followed by the other two travellers. He describes the country as rising gradually to the westward, and many tracts as being well cultivated with maize, tobacco, and occasionally bananas, although the natives are naturally averse from doing anything but the minimum amount of agricultural labour requisite. Fields of sugar-cane, capsicum and other crops were found near the western limit of their journey. Herr Marno gives a complete itinerary and survey of his route, and series of height and meteorological observations, which have been described by Dr. Hann, the well known meteorologist, as very complete and valuable.

The American Survey of the Amazon.—This new survey was announced in our number for September 1878 (p. 230). The steam sloop 'Enterprise' returned to Brooklyn navy-yard last October, after an absence of five months. Her commander, Thomas O Selfridge, who was in command of the Darien Survey Expedition in 1871-72, reports that a complete range of soundings was taken daily at five minutes' intervals. The survey extended from the mouth of the Amazon to the falls of the Madeira. For a distance of 500 miles the Madeira was found to be navigable for vessels drawing 20 feet. But, as Mr. Chandless pointed out at p. 300 of our last number, the above was a mere running survey—the work of a few weeks—and adds nothing to the information furnished in the admirable maps of the River Amazon executed after surveys by the Brazilian Frontier Commission.

Death of General Mosquera.—We regret to have to announce the death of General Tomas Cipriano de Mosquera, a veteran of Columbian Independence, and an ardent geographer. He was one of the founders of the Republic of Columbia, and was President from 1844 to 1848, from 1861 to 1864, and again in 1866. During his administration, the new Columbian Constitution of May 8th, 1863, was proclaimed, by which Presidents hold office for two years. He also separated the Church from the State, and destroyed the influence of the priests in political affairs. He died almost suddenly at his estate of Coconuco, in the State of Cauca, on October 7th, 1878, in his eightieth year. As a geographer, General Mosquera is known to us through his work, *Memoria sobve la geografia, fisica y politica, de la Nueva Granada*, published at New York, with a map, in 1852, and translated into English in 1853. When he came to England as Minister for the United States of Columbia in 1865, he was an attendant at the meetings of the Geographical Society. On April 24th, 1865, he dined with the Geographical Club, and his

health, proposed by the President, Sir Roderick Murchison, was very warmly and cordially received.

Earthquake in San Salvador.—There has been a severe earthquake in the Republic of San Salvador, in Central America. At 6 p.m. on the 2nd of October the village of Jucuapa, in the southern department of Usutlan, was nearly destroyed, many families being buried in the ruins. The towns of Guadalupe, Nueva Guadalupe, Chinameca, Usutlan, the Caseria del Arsenal, and Santiago de Maria have also suffered more or less, the latter being entirely ruined and some lives lost. The shock which produced the greatest damage was at first a kind of oscillatory movement which lasted over 40 seconds, and terminated in what felt like a general upheaval of the earth, so violent that solid walls and arches, and strongly-braced roofs, were broken and severed like pipe stems. The movement proceeded from the south-west to the north-east. It was supposed to proceed from the volcano of Tecapa, which is reported as being in conflagration. The district that has been devastated is one of the most-thickly settled portions of the Republic. The people devote themselves to the cultivation of indigo, sugar-cane, and tobacco. They are industrious and thrifty, and many of them were in very comfortable circumstances.

Correspondence.

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THE KULDJA QUESTION.

FROM THE RUSSO-CHINESE FRONTIER.

To the Editor of the "GEOGRAPHICAL MAGAZINE."

SIR,—In your last number I see a paper on the Kuldja question, in which the state of affairs between China and the Russian Government is correctly though briefly explained. The claim of the Chinese, with reference to the restitution of Kuldja (which the Government of St. Petersburg has pledged itself to surrender as soon as the pacification of Eastern Turkestan ensures quiet on the Russo-Chinese frontier) is also stated. It may, therefore, be interesting to your readers to have a somewhat more detailed account of that transaction, respecting which we are now enabled to publish the following details:—

It was on the 19th July that the Embassy sent by the Tzin-tzan-tzyen—*i.e.* the Chief Commander of the Chinese troops in Kashgar, consisting of the Commandant de Corps, *On-khua-ti;* of the Commander of the Elder Regiment, *Hei-khun-lyan;* and of the Intendant of the Tchili province, *Littri-syen*—arrived at Vernöe, bearing two letters in reference to the extradition of Bye-yan-kho, a fugitive rebel, and to the surrender of Kuldja. Both letters were addressed to General Kalpakoffsky (almost literally translated), and run as follows:—

(The first letter). "Kuldja has always been our frontier. Formerly, in the 10th year of the rule of Tuntch-shi, your respectable Governor made to us the communication that you take upon yourself the obligation of surrendering Kuldja, and in that sense you wrote to our Ministry for Foreign Affairs. For this open-heartedness the Imperial Government is thankful to you. Besides this, others will thankfully acknowledge the act of surrender. The Dzian-tzun-shun has been unable to come forward hitherto with this business, in consequence of the unruly state of the country; but now the time has come for doing so, as, under the happy auspices of our Emperor, our soldiers have been victorious, many towns have been taken, and order and tranquility have been established on our frontier. Therefore the question has been raised in the letter of Tzo-tzun-tan; and you are invited to regulate with us the conditions of the surrender of Kuldja, so that on his arrival the act of re-occupation may proceed smoothly."

(The second letter). After the usual salutations: "You will know that Bai-yan-khu, a leading chief of the rebellion, has succeeded, during the last winter, in escaping into your territory, where he has settled in Tokmak; in consequence of which the Dungan Mahmud (Mamut) has been sent with a letter to you. In your answer, respectable Governor, you said that you are unaware whether the said man is a rebel or not; you pretended to see in him a man escaping from danger, and therefore you accorded to him a reception. Well, since the Tzo-tzun-tan gives you clearly to understand in his present letter that Bai-yan-khu is actually a rebel, you, respectable Governor, must feel the obligation to deliver up that man, in order to strengthen the friendship of the two Empires. This is the more incumbent as our mutual treaties clearly state that every Russian subject, who lives either voluntarily within the Chinese territory, or who is a fugitive, will be delivered up when claimed; and, further, there is a stipulation in the treaty of commerce between Kuldja and Tarbagatai, that the transgressors of both sides cannot be retained, but must be delivered to the respective authorities. It is obvious, therefore, that you, respectable Governor, ought to have remitted to us, a long time ago, the said Bai-yan-khu, for the sake of friendship and a good understanding between the two Empires. This is the reason for which we have been sent, and in the fulfilment of which we hope to receive a satisfactory answer."

Such is the wording of the Chinese letters. The answer given by General Kalpakoffsky during the receptions on the 21st and 29th July, was to the effect that although this matter has been brought to the notice of the Russian Ambassador in Peking, still he (*i.e.* the General) must remark that so long as the Russian claims are not complied with, the question of the surrender of the Ili valley to the Peking Government cannot be entertained; and as regards Bai-yan-khu, that man not being looked upon as a thief or a fugitive on Russian territory, cannot be delivered up in accordance with the Russian laws. It was upon this that the Chinese Embassy left Vernöe after a sojourn of thirteen days, which passed off pretty well, as the envoys were invited to various festivities and amusements.

In connection with the above, we have been favoured with a few particulars respecting the military and civil administration of Eastern Turkestan, at the head of which is the Viceroy Lin-sho-Darin, who commands an army, amounting to 8000 or 10,000 men, encamped chiefly between Kashgar and Yenghi-Shahr, the soldiers living mainly upon the inhabitants. Each house has to pay monthly from 1 to 10 roubles, and must furnish besides all kind of victuals and a certain number of hands for public constructions, such as fortresses, walls, houses for the officers, and a large pagoda. Acts of cruelty and of gross injustice are of daily occurrence, whilst complaints are unheard and redress impossible. In the meantime all commercial movements are strictly forbidden, for the Lin-sho-Darin has issued an order forbidding the export of articles from Eastern Turkestan to Russian Central Asia under the heaviest penalties, and that foreign (*i.e.* Russian) subjects must leave the country within fifteen days, or become Chinese subjects. Judging from the details before us, the frontier question between China and Russia is getting more embroiled from day to day, and a *casus belli* will easily be found as soon as it suits the politicians on the bank of the Neva.

I am, &c.,

A. VAMBERY.

Proceedings of Geographical Societies.

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FRENCH GEOGRAPHICAL SOCIETY.

October 16th, 1878.—M. DE QUATREFAGES in the chair. The President referred to the death of M. Le Baron Nau de Champlonis, M. Anthelme Thozet, at Rockhampton, in Queensland, and Dr. Petermann. A letter was read from the Vice-President of the German African Society, announcing the departure of two expeditions to Central Africa during the ensuing month. These two expeditions propose to explore the basin of the Congo, one starting from Loanda and journeying in the direction of Mussumba and the other making for Adamaua and Wadai. Following these two lines of advance, the explorers will then converge towards the Congo. The southern expedition will be commanded by M. Max Buchner, a gentleman of geological and zoological acquirements, who will first proceed to Mussumba, and thence onward to Nyangwe, which he will make his base of operations. The northern expedition will be entrusted to M. Gerhard Rohlfs, who will be accompanied by Dr. Sseener. These gentlemen will start from Tripolis to Wadai, the Sultan of which appears to be well disposed to Europeans, according to Dr. Nachtigal. From Wadai the travellers will make for the Shari, and, if possible, from thence for the Congo. The exploration of the water-parting of the Shari, the Congo and the Ogowai being the most important geographical problem still awaiting solution, full liberty of action is reserved to M. Rohlfs to do as his judgment suggests.

Dr. CREVAUX announced by letter his return to Cayenne on the 29th July last.

The MINISTER FOR FOREIGN AFFAIRS informed the Society of the departure of the Abbé Debaize from Bagamoyo in the beginning of August, accompanied by a caravan of upwards of 400 men.

After M. MANNOIR had read an obituary notice of the late Dr. Petermann, a letter was read from M. E. ANSART, civil engineer, dated the 12th June, from a point on the eastern shore of Costa Rica. This gentleman is occupied in making a survey and clearing the site for a railroad which is to start from Port Lemon, on the Atlantic, and to go inland. The central plateau, where San José is situated, and where coffee is extensively grown, is separated from the Atlantic by a chain of volcanic mountains, the highest of which, called Fraza, is 10,660 feet high. The slopes of these mountains are very steep, and the rivers which course down its sides flow in very deep fissures with perpendicular sides, often 600 feet in height, making a railway across them a matter of extreme difficulty. This belt of country is covered with virgin forests, the trees of which attain a height of close on 200 feet and 20 feet in diameter. M. Ansart's working party consists of 400 men, under the direction and command of General Quesada. One hundred of these form an advance guard, under M. Ansart's immediate supervision; twenty-five cut a passage for the visual ray of the theodolite, a like number enlarge the path, and 50 more following fell all trees within a path of 13 feet width. The main body of the party, 300 men strong, enlarge the roadway to a breadth of rather more than 30 yards, and clear it thoroughly, so as to admit of the sun drying up the natural moisture of the ground. The stores are carried on mule-back.

The country is described by M. Ansart as remarkably healthy, not a single case of fever having occurred in his camp. Dysentery, however, is common (though not of a fatal character), and is chiefly attributable to dampness and to the poorness of the food. The party are generally lulled to sleep by a torrent of rain which falls as a rule some time after sunset and lasts about two hours.

This concluded M. Ansart's letter and after a lecture from M. Deloncle, of the Lyons Geographical Society, the meeting adjourned.

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IMPERIAL RUSSIAN GEOGRAPHICAL SOCIETY.

October 11th (*23rd*).—M. P. DE SEMENOF, Vice-President, in the chair. H.I.H. the Grand Duke Constantine was present, this being the first meeting after the recess.

M. SREZNEVSKY, the Secretary, referred to the loss of several corresponding and ordinary members, among whom were the late Dr. Petermann, M. Stubendorff and others. He also gave, in his monthly report, a complete account of Baron Aminof's examination of the water-parting between the Ob and the Yenisei rivers. Having arrived at Yeniseisk towards the close of April, he descended the Ket river on the 13th of May, and after reaching the confluence of the Ozerna, ascended the latter river, the Lomovat and the Jazeva, and on the 21st reached the marshes intervening between the Ob and Yenisei. After making a *portage* for a distance of 3½ versts, the expedition reached the Kass lake, and thence made their way down the Great and Little Kass rivers to the Yenisei. A line of levels was commenced from the confluence of the Ozerna to that of the Great Kass. The only real obstruction in the way of navigation appear to lie in the Jazeva and the upper part of the Little Kass, which are very narrow and sinuous. The Baron considers that it may be necessary to construct locks in order to render the rivers navigable during all seasons, but the general practicability of the scheme can hardly be decided till the levels have been completed. He expected to finish the work of the expedition about the beginning of October, when the rivers are frozen.

An account was given of M. Poliakof's ethnological researches in the valley of the Oka. This gentleman has found a large number of stone implements of various shapes, belonging to the neolithic period side by side with bones of animals of the present age, He also found some prehistoric structures made out of large trunks of oak, &c., and bearing some similarity to lacustrine habitations. The most interesting discovery was made near the village of Karacharof, and consisted of a profusion of mammoth, rhinoceros, and *Bos primogenus* bones, and some common flint implements of the palæolithic age, found in a stratum of subsequent date to the glacial period. After completing these researches, M. Poliakof undertook a tour through the greater part of Europe to make a study of the stone implements in different museums.

M. Smirnof had finished his magnetic observations at the mouth of the Petchora, thus completing the whole series of magnetic observations over the whole extent of Russia in Europe. M. Meddendorff's journey to Turkestan for the purpose of studying its agricultural conditions had been highly successful, and he had returned to St, Petersburg leaving M. Smirnof to study the fruit of the country. In the Arctic regions, M. Tratchin had started for Novaya Zemlya with the object of studying the natural history of the country, and M. Nordquist had joined Professor Nordenskiold's expedition from Europe to Behring Straits.

The Society has commemorated the fiftieth anniversary of the Berlin Geographical Society by the foundation of two Medals, one in memory of Humboldt and the other of Karl Ritter. The first of these two will be awarded every five years for the highest geographical achievement, and this year has been given to Colonel Prejevalsky for his exploration to Lob-Nor.

Colonel PREJEVALSKY then read an account of his last journey, and exhibited specimens of the arms and clothing of the inhabitants of the Tarim valley and vicinity of Lob-Nor. This paper was very much applauded.